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Risk factors associated with *Mycoplasma capricolum* subspecies *capripneumoniae* and morbillivirus infection in small ruminants in Tanzania

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Abstract

Mortality of domestic small ruminants caused by contagious caprine pleuropneumonia (CCPP) and Peste des petits ruminants (PPR) is frequently reported in Tanzania. A cross-sectional survey was conducted between June, 2016 and July, 2017 to identify risk factors for small ruminants exposure to *Mycoplasma capricolum* subsp. *capripneumoniae* (*M. capripneumoniae*), the causative agent of CCPP, and small ruminant morbillivirus (SRMV), the causative agent of PPR. Antibody detection was done using competitive enzyme-linked immunosorbent assays (cELISA); similarly, a semi-structured questionnaire was administered in flocks where serum samples were collected. Individual seropositivity for *M. capripneumoniae* was 6.5% ($n=676$) and 4.2% ($n=285$) in goats and sheep respectively, whereas SRMV was 28.6% in goats ($n=676$) and 31.9% in sheep ($n=285$). Multivariable analysis indicated that mixing of flocks was a risk factor for exposure to *M. capripneumoniae* ($\chi^2=3.9$, $df=1$, $p=0.05$) and SRMV ($\chi^2=6.3$, $df=1$, $p=0.01$) in goats. Age was a protective factor for SRMV seropositivity in both goats ($\chi^2=7.4$, $df=1$, $p=0.006$) and sheep ($\chi^2=10.2$, $df=1$, $p=0.006$). SRMV seropositivity in goats was also influenced by grazing in contact with wild animals ($\chi^2=5.9$, $df=1$, $p=0.02$) and taking animals to the animal markets ($\chi^2=8.2$, $df=1$, $p=0.004$). *M. capripneumoniae* and SRMV are influenced by several risk factors and their control needs concerted efforts between stakeholders, which may include community involvement in mandatory vaccination and animals' movement control.

Keywords

Contagious caprine pleuropneumonia; Domestic small ruminants; Peste des petits ruminants; Risk factors